5. Total Maximum Daily Loads

A TMDL prescribes an upper limit on discharge of a pollutant from all sources to attain water quality standards. It further allocates this load capacity (LC) among the various sources of the pollutant. Pollutant sources fall into two broad classes: point sources, each of which receives a waste load allocation (WLA); and nonpoint sources, which receive a load allocation (LA). When present, natural background sources (NB) are considered part of the load allocation but are often considered separately because NB represent a part of the load not subject to control. Because of uncertainties regarding quantification of loads and the relation of specific loads to attainment of water quality standards, the rules regarding TMDLs (40 CFR § 130) require a margin of safety (MOS) be a part of the TMDL.

Practically, the MOS is a reduction in the load capacity that is available for allocation to pollutant sources. NB load is also effectively a reduction in the load capacity available for allocation to anthropogenic pollutant sources. This can be summarized symbolically as the equation:

LC = MOS + NB + LA + WLA = TMDL

The equation is written in this order because it represents the logical order in which a loading analysis is conducted. First, the LC is determined. Then, the LC is broken down into its components: the necessary MOS is determined and set aside; then NB, if relevant, is quantified and set aside; and then the remainder (LA and WLA) is allocated among pollutant sources. When the breakdown and allocation are completed, a TMDL, which must equal the LC, is established.

Another step in a loading analysis is the quantification of current pollutant loads by source. This allows the specification of load reductions as percentages from current conditions, considers equities in load reduction responsibility, and is necessary in order for pollutant trading to occur. Also, a required part of the loading analysis is that the LC must be based on critical conditions, the conditions that exist when water quality standards are most likely to be violated. If a TMDL is protective under critical conditions, it must be more than protective under less extreme conditions. Because both LC and pollutant source loads vary independently, determination of critical conditions can be complicated.

A load is defined as a quantity of a pollutant discharged over some period of time and is the product of concentration and flow. Due to the complex nature of pollutants and the difficulty of accurately calculating loads, the federal rules allow for other appropriate measures to be used when necessary. These other measures must be quantifiable and relate to water quality standards, but they allow flexibility to deal with pollutant loading in more practical and tangible ways. The rules also recognize the particular difficulty of quantifying nonpoint loads, and allow gross allotment as a load allocation where available data or appropriate predictive techniques limit more accurate estimates. For

pollutants that have long-term effects, such as sediment and nutrients, EPA allows for seasonal or annual loads.

5.1 Instream Water Quality Targets

The overall goal of the TMDL is to achieve the full support of designated or existing beneficial uses. These goals will be achieved by meeting certain pollutant target loads, surrogate measures determined through literature values, and/or established numeric and narrative criteria described in Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02).

Design Conditions

The TMDL targets are designed to achieve the full support of the designated or existing beneficial uses in the Weiser River Watershed. Some of these targets are based on water column pollutants, such as total phosphorus, TSS, chlorophyll *a*, and bacteria. Other targets are based on research values, such as the water body substrate composition of percent fines or Potential Natural Vegetation related to temperature.

Target Selection

In order to restore "full support of designated beneficial uses" (Idaho Code 39.3611, et.seq.), the targets listed in Table 103 for nutrients, bacteria, temperature, and sediment are based on either numeric criteria or literature values determined through the use of biological indicators (e.g., substrate targets and macroinvertebrates). A more in-depth discussion of how these targets were derived is included in Section 2 of this document. Table 104 provides citations for the rationale for the target selections.

Table 103. Water Quality Targets for Specific Water Bodies. Weiser River Watershed.

Parameter	Weiser River (Lower) Selected Targets
Bacteria	Less than 126 *E. coli* cfu[a] or mpn/100 ml[b] as a 30 day log mean with a minimum of 5 samples and no sample greater than 406 *E. coli* cfu or mpn/100 ml
Sediment	Less than or equal to 50 mg/L TSS for no more than 30 days, less than or equal to 80 mg/L TSS for no more than 14 days, both calculated as a geometric mean over the exposure duration, and a substrate target of percent fines (<6.0 mm[e]) not to exceed 30%
Temperature	See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.
Parameter	**Weiser River (Middle)** **Selected Targets**
Sediment	Less than or equal to 50 mg/L TSS for no more than 30 days, less than or equal to 80 mg/L TSS for no more than 14 days, both calculated as a geometric mean over the exposure duration and a substrate target of percent fines (<6.0 mm) not to exceed 30%
Temperature	See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.
Parameter	**Little Weiser River** **Selected Target**
Bacteria	Less than 126 *E. coli* cfu or mpn/100 ml as a 30 day log mean with a minimum of 5 samples and no single sample greater than 406 *E. coli* cfu or mpn/100 ml
Sediment	Less than or equal to 50 mg/L TSS for no more than 30 days, less than or equal to 80 mg/L TSS for no more than 14 days, both calculated as a geometric mean over the exposure duration, and a substrate target of percent fines (<6.0 mm) not to exceed 30%
Temperature	See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.
Parameter	**Crane Creek (Crane Creek Reservoir to Weiser River)** **Selected Target**
Sediment	Less than or equal to 50 mg/L TSS for no more than 30 days, less than or equal to 80 mg/L TSS for no more than 14 days, both calculated as a geometric mean over the exposure duration and a substrate target of percent fines (<6.0 mm) not to exceed 30%
Bacteria	Less than 126 *E. coli* cfu or mpn/100 ml as a 30 day log mean with a minimum of 5 samples and no single sample greater than 406 *E. coli* cfu or mpn/100 ml
Temperature	See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.

a colony forming units
b most probable number per 100 milliliters
c milligrams per liter
d total suspended solids
e millimeters
f micrograms per liter

Table 104. Water Quality Target Rationale. Weiser River Watershed.

Parameter	Selected Target Rationale
Bacteria	IDAPA 58.01.02.251.01, numeric criteria for full support of primary contact recreation
Nutrients	Recommended criteria for eutrophic water bodies (EPA 1972) Established TMDLs for similar water bodies in region (e.g., Cascade Reservoir)
Sediment (TSS)	Established TMDLs for similar water bodies in region (e.g., Boise River)
Temperature	IDAPA 58.01.02.053. BENEFICIAL USE SUPPORT STATUS - Natural Conditions. IDAPA 58.01.02.200.09 Natural Background Conditions.
Percent Fines	Biological indicators' tolerance of percent fines (Clark 2003; and Relyea, Minshall, and Danehy 2000)

Monitoring Points

Biological assessments should be conducted on a routine basis to determine the response of biological indicators to the targets set in the TMDL. Since much of the original assessment process is based on these indicators, continuous monitoring will be essential to determine response. The biological assessment completed in the years 2000 and 2001 (Ingham 2000) will act as guidance to determine if the goals and targets described in the TMDL are adequate for the full support of the designated or existing beneficial uses or if modifications are required to re-address the targets or the attainability of the beneficial uses. Additional biological assessments should be conducted on the Little Weiser River at the established BURP monitoring site, along with an additional site directly upstream of the §303(d) listed segment (above Indian Valley).

Water column assessments should focus on compliance areas described in the TMDL. These compliance areas include the following locations:

- Weiser River confluence with the Snake River
- Weiser River at the USGS gage 13266000
- Crane Creek near the confluence with the Weiser River
- Weiser River at Midvale
- Little Weiser River near Cambridge

Bacteria assessments should be conducted at least once every two years on the three segments determined not fully supporting primary contact recreation.

Additional assessments and determinations of the difference between TSS and SSC should be an ongoing program. Monitoring for these two parameters should focus on high discharge periods when high discharge velocities will cause the movement of large sediment particles.

5.2 Load Capacity

Loading capacity is the maximum load that each water body can accommodate and still meet the water quality standards "with season variations and a margin of safety which takes into account any lack of knowledge..." (CWA § 303(d) (C)). Likely sources of uncertainty include lack of knowledge of assimilative capacity, uncertain relations of a selected target or targets to a beneficial use or uses, and variability in target measurement. Load capacity for these stream segments was determined by using the target criteria to identify loads per day.

Most load capacities are based on water column concentrations, which can vary depending on the amount of water. That is, since concentrations are based on an amount of a substance per a known volume of water (e.g., mg/L), that concentration would change if additional water (but not additional substance) was added. However, the overall load would not increase. By determining loads as a function of discharge, it is hoped that this variation will be reduced. For most of the load capacities determined in the Weiser River Watershed, the load was determined as a function of discharge. Normalized discharge was used as a mechanism to offset the extreme high and low discharges associated with the Weiser River. Data analysis showed that, in most cases, the normalized load data correlated well with the limited data for the actual load measured.

All loads were calculated based on target concentrations and normalized discharge for the critical period or for the period when an exceedence of criteria was occurring (e.g., total suspended sediment exceedence). All loads presented in Table 105 through Table 108 are estimated load capacities under normalized discharge conditions and at concentrations that will achieve water quality targets.

In some situations, a pollutant load (mass/unit/time) is not an appropriate means of describing a target. In these situations, surrogate measures are more appropriate. For the Weiser River Watershed, some of these targets consist of water column concentrations (without a discharge measurement), substrate composition, or a shade component to reduce thermal input. None of these offer the traditional load components of a mass/unit/time calculation, but they provide a target for achieving the full support of designated or existing beneficial uses.

Tables 105 through 108 shows the load capacity for the pollutants impairing beneficial uses. Table 130 provides a synopsis of load capacity, existing loads, load allocations, reductions required and percent reduction required.

Table 105. Load Capacity, Lower Weiser River.

Pollutant	Critical Period	Load Capacity
E. coli Bacteria	July	(cfu or mpn)[a]
		280,000
Sediment (TSS)[b]		(kg/day)[c]
	March	301,000
	April	309,000
	May	301,000
Sediment (% Fines)	Year Round	%
		30.0
Thermal	June-September	d

a colony forming units and most probable number b total suspended solids c kilograms per day
d See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.

Table 106. Load Capacity, Middle Weiser River.

Pollutant	Critical Period	Load Capacity
Sediment (TSS)[a]		kg/day[b]
	February	188,000
	March	295,000
	April	304,000
	May	306,969
	June	190,000
Sediment (% Fines)		%
	Year Round	30.0

a total suspended solids
b kilograms per day

Table 107. Load Capacity, Crane Creek, Crane Creek Reservoir to Weiser River.

Pollutant *E. coli* Bacteria	Critical Period	Load Capacity (cfu or mpn/day)[a]
	July	3,530,000
Sediment (% Fines)		%
	Year Round	30

a colony forming units and most probable number

Table 108. Load Capacity, Little Weiser River.

Pollutant	Critical Period	Load Capacity
E. coli Bacteria	July	(cfu or mpn/day)[a]
		1,240,000
Sediment (% Fines)	Year Round	%
		30.0

a colony forming units and most probable number

5.3 Estimates of Existing Pollutant Loads

Loading analyses were performed where adequate water quality data for tributaries were available (See Tables 116 through 120). Regulations allow that loadings "...may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading." (40 CFR § 130.2(g)). Table 120 provides a synopsis of load capacity, existing loads, load allocations, reductions required, and percent reduction required.

Table 109. Existing Loads, Lower Weiser River.

Pollutant	Existing Load
E. coli Bacteria	(cfu or mpn/day)[a]
	6,760,000
Sediment (TSS)[b]	(kg/day)[c]
March	326,000
April	338,000
May	340,000
Sediment (% Fines)	%
	41.7
Thermal	d

a colony forming units and most probable number, b total suspended solids second, c Joules per square meter per sec, d See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.

Table 110. Existing Loads, Middle Weiser River.

Pollutant	Existing Load
Sediment (TSS)[a]	(kg/day)[b]
February	211,900
March	516,500
April	532,000
May	562,000
June	256,000
Sediment (% Fines)	%
	21.1
Sediment (Turbidity)	NTUs[c]
July-September	35

a total suspended solids
b kilograms per day
c nephelometric turbidity units

Table 111. Existing Loads, Crane Creek.

Pollutant	Existing Load
E. coli Bacteria	(cfu or mpn/day)[a]
July	20,900,000
Sediment (% Fines)	%
	NA
Sediment (Turbidity)	NTUs[b]
July-September	38

a colony forming units and most probable number
b nephelometric turbidity units

Table 112. Existing Loads, Little Weiser River.

Pollutant	Existing Load
E. coli Bacteria	(cfu or mpn/day)[a]
	6,534,000
Sediment (% Fines)	%
	13.0[b]

a colony forming units and most probable number, b Although the existing load identified is below the target,a considerable amount of unstable streambanks exist in the Little Weiser River watershed.

5.4 Load Allocation

Using the existing data in concert with target concentrations, load allocations were determined for each watershed. The total allocation includes a margin of safety to account for seasonal variability and uncertainty.

Although the best available techniques and information are applied, uncertainty arises in the selection of water quality targets, load capacity, and estimates of existing loads. This can be attributed to the variability and number of nonpoint sources. The margin of safety is a reduction in loading capacity that is identified prior to allocation to any sources that introduce uncertainty.

Margin of Safety

Several areas of uncertainty are addressed by applying a margin of safety. In this TMDL, storm events may not be captured in the existing data set since the data consist of biweekly and monthly measurements. Pollutant loads vary from year to year, and this variability may not be adequately assessed with only two years of monitoring data.

The margin of safety varies by pollutant. Some margin of safety parameters are based on the statistical analysis of existing data and are compared to water quality modeling results. Table 113 provides the margin of safety to be used on the different segments and the different pollutants.

Table 113. Margin of Safety and Rationale, Selected Water Bodies. Weiser River Watershed.

Water Body/Pollutant	Margin of Safety	Rationale
Lower Weiser River		
Bacteria	12.6% of Load Capacity	Based on Relative Range of Duplicate Samples
Sediment (Water Column)	10.8% of Load Capacity	Square Root Error of Modeling Results
Sediment (% Fines Substrate)	14.0% of Load Capacity	10% Allowance for Sampling Error 4% Allowance for Analytical Error
Middle Weiser River		
Sediment (Water Column)	9.3% of Load Capacity	Square Root Error of Modeling Results
Sediment (% Fines Substrate)	14.0% of Load Capacity	10% Allowance for Sampling Error 4% Allowance for Analytical Error
Crane Creek		
Bacteria	15.4% of Load Capacity	Based on Relative Range of Duplicate Samples
Sediment	10.4% of Load Capacity	Square Root Error of Modeling Results
Sediment (% Fines Substrate)	14.0% of Load Capacity	10% Allowance for Sampling Error 4% Allowance for Analytical Error
Little Weiser River		
Bacteria	14.0% of Load Capacity	10% Allowance for Sampling Error 4% Allowance for Analytical Error
Sediment	12.2% of Load Capacity	Square Root Error of Modeling Results

Background

In addition to the margin of safety, the natural and background loads represent further reductions in loading capacity available for allocation. Natural sources are those that originate from non-anthropogenic sources and, as such, require no reductions. Background sources are those that originate upstream from a segment of a water body and may or may not require reductions. Table 114 describes the background levels and provides a rationale for application of a background level on selected water bodies.

Waste Load Allocations

Water quality data collected in the year 2003 showed the point sources within the Weiser River Watershed. The wastewater treatment plants in the cities of Cambridge and Council are having negligible influence on water quality. The data indicated that discharges to the river had little to no affect on total phosphorus loads. These facility's waste load allocations should be established at the current NPDES permitted levels.

Point sources discharging directly to the Weiser River within the TMDL reach are allocated heat loads corresponding to discharge loads, and the discharge loads are applied to design flows to ensure that measurable increase requirements are not exceeded. These waste loads are not included in the following tables or discussion of load allocations.

Load Allocations

Load allocations are assigned to nonpoint sources. Any reductions required to meet allocations should be directed at those sources.

Modifications to Load Allocations

In coordination with the WAG, DEQ intends to review and modify, if necessary, the load allocations to the water quality segments provided in this TMDL as additional data and information become available during implementation. Successful implementation depends upon the cooperation of and resources available to the stakeholders in the watershed. It is recognized that the load allocations may require modification as stakeholders and designated agencies determine the best pollution control strategies to reach water quality targets. For example, during implementation, it may be discovered that water quality targets can best be attained by reducing sources in one area rather than another. The load allocations should be modified to reflect these implementation considerations.

Table 114. Background Allocations and Rationale, Selected Water Bodies. Weiser River Watershed.

Water Body/Pollutant	Background	Rationale
Lower Weiser River		
Bacteria	20% of Load Capacity	Allowance for Natural Occurrence
Sediment (Water Column)	20% of Load Capacity	Allowance for Natural Occurrence
Sediment (% Fines Substrate)	16.6 % of Load Capacity	Allowance for Natural Occurrence Deposition
Temperature (Thermal)	c	c
Middle Weiser River		
Sediment (Water Column)	20% of Load Capacity	Allowance for Natural Occurrence
Sediment (% Fines Substrate)	16.6 % of Load Capacity	Allowance for Natural Occurrence Deposition
Crane Creek		
Bacteria	20% of Load Capacity	Allowance for Natural Occurrence
Sediment (Water Column)	20% of Load Capacity	Allowance for Natural Occurrence
Sediment (% Fines Substrate)	20% of Load Capacity	Allowance for Natural Occurrence Deposition
Little Weiser River		
Bacteria	20% of Load Capacity	Allowance for Natural Occurrence
Sediment	20% of Load Capacity	Allowance for Natural Occurrence

a milligrams per liter, b micrograms per liter, c See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.

Further refinement of natural and background sources will be ongoing as more data is collected. Since TMDLs are a dynamic process, the document will be updated as appropriate.

Reserve

The identified sources and land uses are predominantly agricultural, with some minor influence from roadways. With the identified trend of conversion from agricultural land uses to urban/suburban and rural development land uses, agricultural sources of pollutants are likely to remain stable or decrease within the implementation lifetime of this TMDL. For this reason, no future pollutant source load allocations (reserve capacity) were calculated.

Seasonal Variation

Bacteria loads are based on the critical period when a high probability exists for primary contact recreational use, such as swimming. However, load reductions should be based on reducing bacteria levels throughout the year and should also provide for full support of secondary contact recreation, which includes activities such as fishing where the possibility of ingesting river water is still a concern.

Targets selected for sediments are based on the use of biological indicator species. Water column targets for TSS are designed to reduce the slugs of sediment associated with high discharge periods. However, all sediment sources must be addressed to meet the substrate targets.

See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.

Reasonable Assurance

The state has responsibility under Sections 401, 402, and 404 of the CWA to provide water quality certification. Under this authority, the state reviews dredge and fill, stream channel alteration, and NPDES permits to ensure the proposed actions will meet Idaho WQS.

Under Section 319 of the CWA, each state is required to develop and submit a nonpoint source management plan (NSMP). Idaho's NSMP has been submitted to EPA and has been approved (Idaho DEQ 1999*d*). The NSMP identifies programs for implementation of best management practices (BMPs), identifies available funding sources, and includes a schedule for program milestones. It is certified by Idaho Attorney General to ensure that adequate authorities exist to implement the NSMP.

Idaho's NSMP describes many of the voluntary and regulatory approaches the state will take to abate nonpoint source pollution. Section 39-3601, et seq., of the CWA includes provisions for public involvement, such as the formation of Basin Advisory Groups and Watershed Advisory Groups (WAGs) (IDAPA 58.01.02.052). The WAGs are established in high priority watersheds to assist DEQ and other state agencies in formulating specific actions needed to control point and nonpoint sources of pollution affecting water quality limited segments. A WAG was formed to assist with this report and its implementation

plan. This WAG will continue to be the main stakeholder contact for the Weiser River Watershed TMDL and its implementation plan. The implementation plan must be completed within 18 months after approval of the TMDL.

Idaho uses a voluntary approach to control agricultural nonpoint sources. However, regulatory authority can be found in the WQS (IDAPA 58.01.02.350.01 through 58.01.02.350.03). IDAPA 58.01.02.054.07 refers to the Idaho Agricultural Pollution Abatement Plan (Ag Plan), which provides direction to the agricultural community for approved BMPs (IDA-SCC 1993). A portion of the Ag Plan outlines elected groups or responsible agencies (e.g., Soil Conservation Districts [SCDs]) who will take the lead if nonpoint source pollution problems need to be addressed. For agriculture, the Ag Plan assigns the local SCDs to assist the land owner/operator with developing and implementing BMPs to abate nonpoint source pollution associated with the land use. If a voluntary approach does not succeed in abating the pollutant problem, the state may seek injunctive relief for those situations that are determined to be an imminent and substantial danger to public health or environment (IDAPA 58.01.02.350.02(a)).

If water quality monitoring indicates WQSs are not being met, even with the use of BMPs or knowledgeable and reasonable practices, the state may request the designated agency to evaluate and/or modify the BMPs to protect beneficial uses.

Construction Storm Water and TMDL Waste Load Allocations

Construction Storm Water

The Clean Water Act requires operators of construction sites to obtain permit coverage to discharge storm water to a water body or to a municipal storm sewer. In Idaho, EPA has issued a general permit for storm water discharges from construction sites. In the past storm water was treated as a non-point source of pollutants. However, because storm water can be managed on site through management practices or when discharged through a discrete conveyance such as a storm sewer, it now requires a National Pollution Discharge Elimination System Permit (NPDES).

The Construction General Permit (CGP)

If a construction project disturbs more than one acre of land (or is part of larger common development) that will disturb more than one acre), the operator is required to apply for permit coverage from EPA after developing a site-specific Storm Water Pollution Prevention Plan.

Storm Water Pollution Prevention Plan (SWPPP)

In order to obtain the Construction General Permit operators must develop a site-specific Storm Water Pollution Prevention Plan. The operator must document the erosion, sediment, and pollution controls they intend to use, inspect the controls periodically and maintain the best management practices (BMPs) through the life of the project

Requirements

When a stream is on Idaho's § 303(d) list and has a TMDL developed, DEQ may incorporate a gross waste load allocation (WLA) for anticipated construction storm water activities where one can be quantified. TMDLs developed in the past that did not have a WLA for construction storm water activities and current TMDLs unable to accurately quantify a WLA for construction stormwater will also be considered in compliance with provisions of the TMDL if they obtain a CGP under the NPDES program and implement the appropriate Best Management Practices.

Typically there are specific requirements you must follow to be consistent with any local pollutant allocations. Many communities throughout Idaho are currently developing rules for post-construction storm water management. Sediment is usually the main pollutant of concern in storm water from construction sites. The application of specific best management practices from *Idaho's Catalog of Storm Water Best Management Practices for Idaho Cities and Counties* is generally sufficient to meet the standards and requirements of the General Construction Permit, unless local ordinances have more stringent and site specific standards that are applicable.

Remaining Available Load

After the natural background and the margin of safety loads are subtracted from the load capacity, the remaining available load represents that amount that can be allocated to nonpoint sources within the subwatersheds in the form of load allocations. At this time, no changes to waste load allocations will be assigned to point sources in the watershed. Current discharge limitations for each point source will be the waste load allocation.

Tables 115 through 117 show the allocations for selected segments in the Weiser River Watershed. Table 120 provides a synopsis of load capacity, existing loads, load allocations, reductions required and percent reduction required.

Table 115. Load Allocations, Lower Weiser River.

Pollutant	Allocation for Segment	Margin of Safety	Natural Background	Upstream Source Allocation	Galloway Dam to Snake River Nonpoint Source Allocation	Total Load Allocation
E. coli Bacteria	(cfu or mpn/day)[a]	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)
July	189,000	30,996	37,800	460,000	120,204	649,000
Sediment (TSS)[b]	(kg/day)[c]	(kg/day)	(kg/day)	(kg/day)	(kg/day)	(kg/day)
March	11,000	42,140	60,200	290,000	-91,340	301,000
April	19,000	43,260	61,800	290,000	-86,060	309,000
May	11,000	42,140	60,200	290,000	-91,340	301,000
Sediment (% Fines)	(%)	(%)	(%)	(%)	(%)	(%)
Year Round	30	4.9	8.6	0.0	16.5	30.0
Thermal June-September	See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.					

a colony forming units and most probable number
b total suspended solids
c kilograms per day

Table 116. Load Allocation, Middle Weiser River.

Pollutant/ Critical Period	Allocation for Segment	Margin of Safety	Natural Background	Upstream Source Allocation	Little Weiser to Galloway Dam Nonpoint Source Allocation	Total Load Allocation
Sediment (TSS)[a]	(kg/day)[b]	(kg/day)	(kg/day)	(kg/day)	(kg/day)	(kg/day)
February	144,700	13,457	28,940	43,300	102,303	188,000
March	196,600	18,284	39,320	98,400	138,996	295,000
April	127,000	11,811	25,400	177,000	89,789	304,000
May	131,969	12,273	26,394	175,000	93,302	306,969
June	125,500	11,672	25,100	64,500	88,729	190,000
Sediment (% Fines)	%	%	%	%	%	%
Year Round	30	4.9	8.6	0.0	16.5	30.0

a total suspended solids
b kilograms per day

Table 117. Load Allocations, Crane Creek, Crane Creek Reservoir to Weiser River.

Pollutant/ Critical Period	Allocation for Segment	Margin of Safety	Natural Background	Upstream Source Allocation	Crane Creek Nonpoint Source Allocation	Total Load Allocation
E. coli Bacteria	(cfu or mpn/day)[a]	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)
July	2,075,380	543,620	706,000	205,000	2,075,380	3,530,000
Sediment (% Fines)	%	%	%	%	%	%
Year Round	30	4.9	8.6	0.0	16.5	30.0

a colony forming units and most probable number

Table 118. Load Capacity, Little Weiser River.

Pollutant	Allocation for Segment	Margin of Safety	Natural Background	Upstream Source Allocation	Indian Valley to Weiser River Nonpoint Source Allocation	Total Load Allocation
E. coli Bacteria	(cfu or mpn/day)[a]	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)	(cfu or mpn/day)
July	613,400	173,600	248,000	205,000	613,400	1,240,000
Sediment (% Fines)	%	%	%	%	%	%
Year Round	30	4.9	8.6	0.0	16.5	30.0

a colony forming units and most probable number

5.5 Implementation Strategies

DEQ recognizes that implementation strategies for TMDLs may need to be modified if monitoring shows that the TMDL goals are not being met or significant progress is not being made towards achieving the goals.

The purpose of this implementation strategy is to outline the pathway by which a larger, more comprehensive, implementation plan will be developed 18 months after TMDL approval. The comprehensive implementation plan will provide details of the actions needed to achieve load reductions (set forth in a TMDL), provide a schedule of those actions, and specify monitoring needed to document actions and progress toward meeting state water quality standards. In the meantime, a cursory implementation strategy is developed to identify issues such as responsible parties, a time line, and a monitoring strategy for determining progress toward meeting the TMDL goals outlined in this document.

The geographic scope of this TMDL encompasses the entire Weiser River Watershed, fourth field HUC 17050124. The water bodies to be addressed include two segments of the Weiser River, the Little Weiser River and Crane Creek (excluding Crane Creek Reservoir). Descriptions of these water bodies and the pollutants to be addressed in the implementation plan are located in Section 2.5.

Time Frame

The implementation plan must include a long-term strategy for implementation and maintenance of the plan. The plan's timeline should be as specific as possible and should include a BMP implementation and/or evaluation schedule, monitoring schedules, reporting dates, and milestones for evaluating progress. There may be disparity in timelines for different subwatersheds. This is acceptable only if reasonable assurance is provided that milestones will be achieved.

The implementation plan will be designed to reduce pollutant loads from sources to meet TMDLs and WQS. Where implementation involves significant restoration, DEQ recognizes that WQS may not be met for quite some time. In addition, DEQ recognizes that technology for controlling nonpoint source pollution is, in some cases, in the developmental stages and that one or more iterations will likely be required to develop effective techniques.

A definitive timeline for implementing the TMDLs and the associated allocations will be developed as part of the implementation plan. This timeline will be developed in consultation with the WAG, the designated agencies, and other interested publics.

Approach

The goal of the CWA, including its associated administrative rules for Idaho, is that WQS shall be met or that all feasible steps will be taken towards achieving the highest quality water attainable. This is a long-term goal in this watershed, particularly because nonpoint sources are the primary concern. To achieve this goal, implementation must commence as soon as possible.

The TMDLs are numerical loads that set pollutant levels such that instream WQS are met and designated beneficial uses are supported. DEQ recognizes that the TMDLs are calculated from mathematical models and other analytical techniques designed to simulate and/or predict very complex physical, chemical, and biological processes. Models and other analytical techniques are simplifications of these complex processes, and, while they are useful in interpreting data and in predicting trends in water quality, they are unlikely to produce an exact prediction of how streams and other water bodies will respond to the application of various management measures. It is for this reason that the TMDLs have been established with a margin of safety.

For the purposes of the Weiser River Watershed TMDLs, a general implementation strategy is being prepared for EPA as part of the TMDL document. Following this submission, in accordance with approved state schedules and protocols, a specific detailed implementation plan will be prepared for pollutant sources.

For nonpoint sources, DEQ also expects that implementation plans be implemented as soon as practicable. However, DEQ recognizes that it may take some period of time, from several years to several decades, to fully implement the appropriate management practices. DEQ also recognizes that it may take additional time after implementation has been accomplished before the management practices identified in the implementation plans become fully effective in reducing and controlling pollution. It is possible that after application of all reasonable BMPs, some TMDLs or their associated targets and surrogates cannot be achieved as originally established. Nevertheless, it is DEQ's expectation that land managers make a good faith effort to achieving their load allocations in the shortest practicable time.

DEQ recognizes that expedited implementation of TMDLs will be socially and economically challenging. Further, there is a desire to minimize economic impacts as much as possible when consistent with protecting water quality and beneficial uses. DEQ further recognizes that, despite the best and most sincere efforts, natural events beyond the control of humans may interfere with or delay attainment of the TMDL and/or its associated targets and surrogates. Such events could be, but are not limited to, floods, fire, insect infestations, and drought.

For some pollutants, pollutant surrogates have been defined as targets for meeting the TMDLs. The purpose of the surrogates is not to bar or eliminate human access or activity in the basin or its riparian areas. It is the expectation, however, that the specific implementation plan will address how human activities will be managed to achieve the

water quality targets and surrogates. It is also recognized that full attainment of pollutant surrogates (system potential vegetation, for example) at all locations may not be feasible due to physical, legal, or other regulatory constraints. To the extent possible, the implementation plan should identify potential constraints, but should also provide the ability to mitigate those constraints should the opportunity arise. If a nonpoint source that is covered by the TMDL complies with its finalized implementation plan, it will be considered in compliance with the TMDL.

DEQ intends to regularly review progress of the implementation plan. If it appears that the implementation plan has been fully implemented, that all feasible management practices have reached maximum expected effectiveness, but that a TMDL or its interim targets have not been achieved, DEQ shall reopen the TMDL and adjust it or its interim targets and the associated WQS as necessary.

The implementation of TMDLs and the associated plans is enforceable under the applicable provisions of the WQS for point and nonpoint sources by DEQ, other state agencies, and local governments in Idaho. However, it is envisioned that sufficient initiative exists on the part of local stakeholders to achieve water quality goals with minimal enforcement. Should the need for additional effort emerge, it is expected that the responsible agency will work with land managers to overcome impediments to progress through education, technical support, or enforcement. Enforcement may be necessary in instances of insufficient action towards progress. This could occur first through direct intervention from state or local land management agencies and second through DEQ. The latter may be based on departmental orders to implement management goals leading to WQS.

In employing an adaptive management approach to the TMDL and the implementation plan, DEQ has the following expectations and intentions:

- DEQ intends to review the progress of the TMDLs and the implementation plans on a 5-year basis, subject to available resources.
- DEQ expects that designated agencies will also monitor and document their progress in implementing the provisions of the implementation plans for those pollutant sources for which they are responsible. This information will be provided to DEQ for use in reviewing the TMDLs.
- DEQ expects that designated agencies will identify benchmarks for the attainment of TMDL targets and surrogates as part of the specific implementation plans being developed. These benchmarks will be used to measure progress toward the goals outlined in the TMDLs.
- DEQ expects designated agencies to revise the components of their implementation plans to address deficiencies where implementation of the specific management techniques are found to be inadequate.
- If DEQ, in consultation with the designated agencies, concludes that all feasible steps have been taken to meet a TMDL and its associated targets and surrogates, and that the TMDL or the associated targets and surrogates are not practicable, the TMDL may be reopened and revised as appropriate. DEQ would also consider reopening the

TMDL should new information become available indicating that the TMDL or its associated targets and/or surrogates should be modified.

Responsible Parties

Development of the final implementation plan for the Weiser River TMDL will proceed under the existing practice established for Idaho. The plan will be cooperatively developed by DEQ, the Weiser River WAG, and other designated agencies with input from the public through an established process. Of the three entities, the WAG will act as the integral part of the implementation planning process to identify appropriate implementation measures. Other individuals may also be identified to assist in the development of the site-specific implementation plans as their areas of expertise are identified as beneficial to the process. Together, these entities will recommend specific control actions and will then, with the Basin Advisory Group, review the specific implementation plan before submitting it to DEQ. DEQ will act as a repository for approved implementation plans.

Designated state agencies are responsible for assisting with preparation of specific implementation plans, particularly for those sources for which they have regulatory authority or programmatic responsibilities. Idaho's designated state management agencies are listed on Table 119.

To the maximum extent possible, the implementation plan will be developed with the participation of federal partners and land management agencies (i.e., NRCS, U.S. Forest Service, Bureau of Land Management, BOR, etc.). In Idaho, these agencies and their federal and state partners are charged by the CWA to lend available technical assistance and other appropriate support to local efforts/projects for water quality improvements.

Table 119. Regulatory Authority for Nonpoint Pollution Sources. Weiser River Watershed.

Nonpoint Source Best Management Practices	Primary Responsible Agency or Agencies	Code/Regulation or Authority Involved
Idaho Forest Practice Rules	Idaho Department of Lands, Board of Land Commissioners	Idaho Code § 39-3602, IDAPA 58.01.02.003.62, IDAPA 58.01.02.350.03
Rules Governing Solid Waste Management	Department of Environmental Quality and the Health Districts	IDAPA 58.01.02.350.03(b)
Rules Governing Subsurface and Individual Sewage Disposal Systems	Department of Environmental Quality and the Health Districts	Idaho Code § 39-3602, IDAPA 58.01.02.350.03(c), IDAPA 58.01.15
Rules and Standards for Stream-Channel Alteration	Board of Water Resources	IDAPA 58.01.02.350.03(d)
Rules Governing Exploration and Surface Mining Operations in Idaho	Idaho Department of Lands, Board of Land Commissioners	Idaho Code § 39-3602, IDAPA 58.01.02.350.03(e), IDAPA 58.01.02.003.62
Rules Governing Placer and Dredge Mining in Idaho	Idaho Department of Lands, Board of Land Commissioners	IDAPA 58.01.02.350.03(f)
Rules Governing Dairy Waste	Idaho Department of Agriculture	IDAPA 58.01.02.350.03.(g) and IDAPA 58.01.02.04.14

All stakeholders in the Weiser River Watershed Subbasin have a responsibility for implementing the TMDLs. DEQ and the designated agencies in Idaho have primary responsibility for overseeing implementation in cooperation with landowners and managers. Their general responsibilities are outlined below.

- **DEQ** will oversee and track overall progress on the specific implementation plans and monitor the watershed response. DEQ will also work with local governments on urban/suburban issues.
- **Idaho Department of Lands** will maintain and update approved BMPs for forest practices and mining. The Idaho Department of Lands is responsible for ensuring use of appropriate BMPs on state and private lands.
- **Idaho Soil Conservation Commission**, working in cooperation with local Soil and Water Conservation Districts, the Idaho Department of Agriculture, and NRCS, will provide technical assistance to agricultural landowners. These agencies will help landowners design BMP systems appropriate for their property and identify and seek appropriate cost-share funds. They also will provide periodic project reviews to ensure BMPs are working effectively.

The designated agencies, WAG and other appropriate public participants are expected to:

- Develop BMPs to achieve load allocations.
- Give reasonable assurance that management measures will meet load allocations through both quantitative and qualitative analyses of management measures.

- Adhere to measurable milestones for progress.
- Develop a timeline for implementation, with reference to costs and funding.
- Develop a monitoring plan to determine if BMPs are being implemented, individual BMPs are effective, load allocations are being met, and water quality standards are being met.

In addition to the designated agencies, the public, through the WAG and other equivalent processes, will be provided with opportunities to be involved in developing the implementation plan to the maximum extent practical. Public participation will significantly affect public acceptance of the document and the proposed control actions. Stakeholders (landowners, local governing authorities, taxpayers, industries, and land managers) are the most educated regarding the pollutant sources and will be responsible for implementing the control actions identified in the plan. Experience has shown that the best and most effective implementation plans are those that are developed with substantial public cooperation and involvement.

Monitoring Strategy

The objectives of monitoring are to demonstrate long-term recovery, better understand natural variability, track implementation of projects and BMPs, and track effectiveness of TMDL implementation. The monitoring and feedback mechanism is a major component of the "reasonable assurance of implementation" for the TMDL implementation plan.

The implementation plan will be tracked by accounting for the numbers, types, and locations of projects, BMPs, educational activities, and other actions taken to improve or protect water quality. The mechanism for tracking specific implementation efforts will be annual reports submitted by the WAG to DEQ.

The "monitoring and evaluation" component has two basic categories:

- Tracking the implementation progress of specific implementation plans, and
- Tracking the progress of improving water quality through monitoring physical, chemical, and biological parameters.

Monitoring plans will provide information on progress being made toward achieving TMDL allocations and achieving WQS and will help in the interim evaluation of progress as described under the adaptive management approach.

Implementation plan monitoring has two major components:

- Watershed monitoring and
- BMP monitoring

While DEQ has primary responsibility for watershed monitoring, other agencies and entities have shown an interest in such monitoring. In these instances, data sharing is encouraged. The designated agencies have primary responsibility for BMP monitoring.

Watershed monitoring measures the success of the implementation measures in accomplishing the overall TMDL goals and includes in-stream monitoring. Monitoring of BMPs measures the success of individual pollutant reduction projects. Implementation plan monitoring will supplement the watershed information available during development of associated TMDLs and fill data gaps.

Watershed Monitoring

In the Weiser River Watershed TMDL, watershed monitoring has the following objectives:

- Evaluate watershed pollutant sources,
- Refine baseline conditions and pollutant loading,
- Evaluate trends in water quality data,
- Evaluate the collective effectiveness of implementation actions in reducing pollutant loading to the mainstem streams and/or tributaries, and
- Gather information and fill data gaps to more accurately determine pollutant loading.

MONITORING TO FILL DATA GAPS

Constituents:
- Chlorophyll *a* and turbidity in Crane Creek Reservoir including an assessment of attainable water quality conditions.
- Analysis of bioassessment protocols on the Little Weiser River
- Additional substrate analysis on Crane Creek below Crane Creek Reservoir
- Additional monitoring of sediment and bacteria in the Little Weiser River above Indian Valley

Schedule:
- Final evaluations completed within the first phase of implementation

ROUTINE PROGRESS MONITORING

Constituents:
- Bacteria, phosphorus, sediment, temperature (potential natural vegetation) and river bioassessment protocols

Locations:
- Monitoring points located upstream and downstream in the defined TMDL segments, namely the middle and lower Weiser River and the Little Weiser River
- Monitoring of major tributaries at their inflow to the middle and lower Weiser River TMDL reach

Schedule:

- Routine monitoring frequency is projected to occur monthly or (at minimum) seasonally as water quality needs require
- Monitoring of major tributaries at their inflow to the middle and lower Weiser River TMDL reach on a monthly or (at minimum) a seasonal basis to determine loading trends

These projected goals of the Weiser River monitoring plan will be a joint effort on the part of many government and private participants. Specific responsibility will be identified as the implementation planning process proceeds.

BMP/Project Effectiveness Monitoring

Site or BMP-specific monitoring may be included as part of specific treatment projects if determined appropriate and justified and will be the responsibility of the designated project manager or grant recipient. The objective of an individual project monitoring plan is to verify that BMPs are properly implemented and maintained and are working as designed. Monitoring for pollutant reductions at individual projects typically consists of spot checks, annual reviews, and evaluations of advancement toward reduction goals. The results of these reviews can be used to recommend or discourage similar projects in the future and to identify specific watersheds or reaches that are particularly ripe for improvement.

Evaluation of Efforts Over Time

Annual reports on progress toward TMDL implementation will be prepared to provide the basis for assessment and evaluation of progress. Documentation of TMDL implementation activities, actual pollutant reduction effectiveness, and projected load reductions for planned actions will be included. If water quality goals are being met, or if trend analyses show that implementation activities are resulting in benefits that indicate that water quality objectives will be met in a reasonable period of time, then implementation of the plan will continue. If monitoring or analyses show that water quality goals are not being met, the TMDL implementation plan will be revised to include modified objectives and a new strategy for implementation activities.

A definitive timeline for implementing the TMDL and the associated allocations will be developed as part of the implementation plan. This timeline will be developed in consultation with the WAG, the designated agencies, and other interested publics.

5.6 Conclusions

There were no water quality or biological data presented that showed nutrients were impairing beneficial uses in the Weiser River. However, total phosphorus load allocations have been developed to address goals and targets for the *Snake River-Hells Canyon SBA-TMDL* (Idaho DEQ and Oregon DEQ 2004). These targets for the Snake River have shown that a significant reduction in total phosphorus from the Weiser River Watershed must occur during the months of May through September.

Biological assessment determined that sediment is impairing designated beneficial uses in the lower Weiser River and middle Weiser River.

Bacteria levels in the lower Weiser River, Little Weiser River, and Crane Creek exceed Idaho's WQS for the support of primary and secondary contact recreation. Total maximum daily loads have been developed on these segments to protect these uses. The target for all water bodies is based on the state WQS criteria of a geometric mean of 126 colony forming units/100 milliliters. Significant reductions will be required in all water bodies to meet this target.

Water temperature in the lower Weiser River exceeds the state WQS for the protection of cold water aquatic life. Both daily average (19 ^{o}C) and maximum daily (22 ^{o}C) temperatures exceeded the criteria. See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.

Four 1998 §303(d) listed water bodies have been determined to be in full support of designated or existing uses. It is recommended that the upper Weiser River (West Fork Weiser River to Little Weiser River), Mann Creek, Johnson Creek, and West Fork Weiser River all be removed from the list. Dissolved oxygen is a listed pollutant in the lower Weiser River. Monitoring showed that dissolved oxygen is meeting water quality standards.

Three water bodies have been determined to be intermittent, and thus intermittent WQS and criteria should be applied to these water quality limited segments. These segments are Cove Creek, South Crane Creek, and North Crane Creek. Water temperature for the middle Weiser River (Little Weiser River to Galloway Dam) exceeded the WQS criteria for the protection of cold water aquatic life. See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.

There are no indications of impairment of drinking water, industrial, or agricultural water supply beneficial uses, nor is there any indication that wildlife habitat and aesthetics are impaired.

The pollutant reductions in this document, if implemented, will ensure that the water bodies listed as water quality limited will achieve full support of their designated or existing beneficial uses. Continued monitoring of water column parameters and biological indicators will be a critical component to ensure that the BMPs implemented are appropriate and to determine which BMPs are most effective. The TMDL monitoring process also ensures that refinements and adjustment to targets can be made as needed. DEQ recognizes that implementation strategies may be modified if monitoring indicates the goals and targets determined in this document are not being met. DEQ also recognizes that, as additional information is collected, the attainability of some uses may be challenged in the future.

Table 120. Water Quality TMDLs and Targets for Selected Water Quality Limited Segments. Weiser River Watershed.

Lower Weiser River											
Pollutant		**Load Capacity**	**Allocation for Segment**	**Margin of Safety**	**Natural Background**	**Upstream Source Allocation**	**Galloway Dam to Snake River Nonpoint Source Allocation**	**Total Load Allocation**	**Existing Load**	**Reduction Required**	**% Reduction Required**
E. coli Bacteria	July	cfu or mpn[a]	cfu or mpn	cfu or mpn	cfu or mpn	cfu or mpn	cfu or mpn	cfu or mpn	cfu or mpn	cfu or mpn	%
		280,000	189,000	30,996	37,800	460,000	120,204	649,000	6,760,000	6,111,000	90%
Sediment (TSS)[b]		kg/day[c]	kg/day	kg/day	kg/day	kg/day	kg/day	kg/day	kg/day	kg/day	%
	March	301,000	11,000	42,140	60,200	290,000	-91,340	301,000	326,000	25,000	8%
	April	309,000	19,000	43,260	61,800	290,000	-86,060	309,000	338,000	29,000	9%
	May	301,000	11,000	42,140	60,200	290,000	-91,340	301,000	340,000	39,000	11%
Sediment (% Fines)	Year Round	%	%	%	%	%	%	%	%	%	%
		30.0	30	4.9	8.6	0.0	16.5	30.0	41.7	12	28%
Thermal	June-September	See the Addendum to the Weiser River Subbasin Assessment and TMDL for information about the Potential Natural Vegetation (PNV) temperature TMDL.									

Table 120. (Continued). Water Quality TMDLs and Targets for Selected Water Quality Limited Segments. Weiser River Watershed.

Middle Weiser River											
Pollutant	Critical Period	Load Capacity	Allocation for Segment	Margin of Safety	Natural Background	Upstream Source Allocation	Little Weiser to Galloway Dam and Crane Creek Nonpoint Source Allocation	Total Load Allocation	Existing Load	Reduction Required	% Reduction Required
Sediment (TSS)		kg/day	kg/day	kg/day	kg/day	kg/day	kg/day	kg/day	kg/day	kg/day	%
	February	188,000	144,700	13,457	28,940	43,300	102,303	188,000	211,900	23,900	11%
	March	295,000	196,600	18,284	39,320	98,400	138,996	295,000	516,500	221,500	43%
	April	304,000	127,000	11,811	25,400	177,000	89,789	304,000	532,000	228,000	43%
	May	306,969	131,969	12,273	26,394	175,000	93,302	306,969	562,000	255,031	45%
	June	190,000	125,500	11,672	25,100	64,500	88,729	190,000	256,000	66,000	26%
Sediment (% Fines)	Year Round	%	%	%	%	%	%	%	%	%	%
		30.0	30	4.9	8.6	0.0	16.5	30.0	21.1	NA	NA

Table 120. (Continued). Water Quality TMDLs and Targets for Selected Water Quality Limited Segments. Weiser River Watershed.

Crane Creek (Crane Creek Reservoir to Weiser River)											
Pollutant	Critical Period	Load Capacity	Allocation for Segment	Margin of Safety	Natural Background	Upstream Source Allocation	Crane Creek Nonpoint Source Allocation	Total Load Allocation	Existing Load	Reduction Required	% Reduction Required
E. coli Bacteria	July	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	%
		3,530,000	2,075,380	543,620	706,000	205,000	2,075,380	3,530,000	20,900,000	17,370,000	83%
Sediment (% Fines)	Year Round	%	%	%	%	%	%	%	%	%	%
		NA	30	4.9	8.6	0.0	16.5	30.0	NA	NA	NA

Table 120. (Continued). Water Quality TMDLs and Targets for Selected Water Quality Limited Segments. Weiser River Watershed.

Little Weiser River											
Pollutant		Load Capacity	Allocation for Segment	Margin of Safety	Natural Background	Upstream Source Allocation	Indian Valley to Weiser River Nonpoint Source Allocation	Total Load Allocation	Existing Load	Reduction Required	% Reduction Required
E. coli Bacteria	July	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	cfu or mpn/day	%
		1,240,000	613,400	173,600	248,000	205,000	613,400	1,240,000	6,534,000	5,294,000	81%
Sediment (% Fines)	Year Round	%	%	%	%	%	%	%	%	%	%
		30.0	30	4.9	8.6	0.0	16.5	30.0	13.0	NA	NA

a colony forming units and most probable number
b total suspended solids
c kilograms per day
d Joules per square meter per second
e milligrams per liter
g micrograms per liter